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Forest Health Protection Pacific Southwest Region



Date: July 27, 2011

File Code: 3420

To: District Ranger, Mt. Hough Ranger District, Plumas National Forest

Subject: Evaluation of Gansner Bar and Hallsted Campgrounds (FHP Report NE11-09)

At the request of Erika Brenzovich, Recreation Specialist, Mt. Hough Ranger District, I conducted a field evaluation of the Gansner Bar and Hallsted Campgrounds on July 19, 2011. The objective of the visit was to evaluate the current forest health conditions within and adjacent to campsites and to provide management recommendations as appropriate. These recommendations will assist with planning future activities, including campground renovations and vegetation and hazard tree management within the recreation area. Erika Brenzovich and Judy Schaber, Resource Officer, accompanied me in the field.

Site information

Both the Gansner Bar and Hallsted Campgrounds are located within the Feather River Canyon along Highway 70 between Twain and Belden, CA (40.0197737°N/121.2227244°W and 40.0178338°N/121.0743491°W). Elevations range from 2,360 at Gansner Bar 2,800 feet at Hallsted with annual precipitation between 40 and 50 inches. Forest cover at Gansner Bar consists of native trees such as ponderosa pine (*Pinus ponderosa*), Douglas-fir (*Psuedotsuga menziesii*), incense cedar (*Calocedrus decurrens*), big leaf maple (*Acer macrophyllum*), black oak (*Quercus kelloggii*), Pacific madrone (*Arbutus menziesii*), canyon live oak (*Quercus chrysolepis*), willow (*Salix* spp.) and alder (*Alnus* spp.) with scattered non-native plantings including species of maple. Hallsted consists of native conifers (ponderosa pine and Douglas-fir), black oak and canyon live oak.

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Management objectives for both campgrounds include the protection and enhancement of native vegetation that will provide screening and shade for campsites and hazard tree mitigation. Hallsted campground is slated for renovations such as new utilities to campsites, new pavement on loops and campsites and new restrooms.

Forest insect and disease conditions

Gansner Bar Campground

The only forest health issue at Gansner Bar is the presence of maple leaf scorch (suspected to be caused by the bacteria *Xylella fastidiosa*) on big leaf maple (Figures 1-3). No other insect or disease problems were observed.



Figure 1. Brown “scorched” leaf margins.



Figure 2. Small scorched leaves and crown dieback of symptomatic big leaf maple.

Hallsted Campground

Recent hazard tree felling has removed western pine beetle killed ponderosa pine and ponderosa pine infected with red ring rot (*Phellinus pini*) that previously existed within the campground.



Figure 3. Long-term infection leading to complete crown dieback.

Maple leaf scorch management at Gansner Bar

Maple leaf scorch is ubiquitous throughout the range of big leaf maple in the northern Sierra Nevada range. Various agents have been proposed as the cause of the annual browning of leaf margins and continuous crown dieback on older trees. These include foliage feeding insects such as leafhoppers (Family Cicadellidae) and abiotic agents such as drought. Only recently were big leaf maples sampled in NE California for *Xylella fastidiosa*, the causal agent of

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bacterial leaf scorch, on symptomatic foliage, where nearly every site tested positive (B. Woodruff, personal communication, 2011). Even though many trees tested positive for *X. fastidiosa*, other factors such as insects and periodic drought cannot be ruled out and are likely part of a larger pest complex. In fact, various leafhopper species are known vectors of *X. fastidiosa* and transmit the bacteria through their feeding activities.

Unfortunately, there are no established management strategies for maple leaf scorch and there are no proven treatments for infected trees. In the case of Gansner Bar campground, the most important short-term management action would be the removal of dead and dying maples that pose a hazard to people and/or property. For the long-term, planting other native tree species to replace dead and dying maples is the best alternative that will provide the shading and screening that is desired in this area. Non-natives are also an option since some of the existing species appear to be growing well at this site. However, the varieties would have to be the same as the existing ones to ensure future health. There is always a risk that non-native trees will ultimately suffer more problems associated with site factors, insects or disease and not support long-term objectives.

Considerations for the Hallsted Campground Renovation

Trees in the Hallsted campground, like most forested campgrounds, are exposed to additional stress factors that can compromise their health and vigor. Firewood collecting sometimes leads to tree wounding from hatchets and saws. Carving and chopping trunks can cause extensive cambium damage and foot and vehicle traffic increases soil compaction and can damage roots. Furthermore, leaving vegetative screening between campsites often results in overstocking of understory trees.

Soil compaction may be partially responsible for predisposing ponderosa pines to recent bark beetle attacks and subsequent mortality. Compaction can reduce the water holding capacity of the soil. Compacted soils also tend to suffocate roots, limiting the available oxygen that is necessary for root growth and survival. Damaged and unhealthy roots cannot provide the upper portions of the tree with the water and nutrients it requires to maintain its natural defenses. Root damage is a long-term problem that may not reveal itself until several years after the damage has occurred. In order to minimize future soil compaction and root damage, campers should be confined to specific travel corridors from campsites to restrooms, water sources, and specific recreation areas. It is especially important to divert and limit foot and vehicle travel and restrict excavation for roads, trails and utilities as much as possible from the root zones of trees.

High stand density is also playing a role in predisposing trees to bark beetle attacks. Excessive competition for limited water and nutrients puts stress on individual trees and reduces their ability to maintain an adequate defense system. Overstocked stand conditions may persist over time with limited bark beetle caused mortality until triggered by drought or other factors. Bark beetle caused mortality within a campground can result in a dramatic reduction in stocking, especially in the larger size classes, and an increase in the number of hazard trees that must be removed.

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To increase health and vigor and reduce the risk of future bark beetle caused tree mortality, stands should be thinned to a basal area appropriate for the site. When determining the carrying capacity of the site the effects of soil compaction should be considered as site quality may be reduced. In addition, where compaction exists, trees may not respond as expected after thinning treatments. In general, to reduce the susceptibility to future bark beetle caused tree mortality, stands should be thinned to densities that are 80% or less of “normal” basal area, effectively reducing tree competition for limited water and nutrients. Furthermore, selecting for more drought tolerant species such as ponderosa pine, Douglas-fir and black oak for retention will make the stand more resilient to insects and disease.

Dense stands surrounding campgrounds would also benefit from thinning. In addition to increasing tree vigor, thinning can reduce the risk of damaging wildfire and provide a more defensible space for protecting the campground.

When planning thinning treatments, it should be recognized that the target stocking level is an average to be applied across the landscape and some variability may be desired. Individual high value trees, such as mature pine, as well as pure stands of younger ponderosa should benefit by having the stocking around them reduced to lower levels. In addition, thinning can decrease the need to enter stands to conduct salvage operations, decrease the amount of fuel loading and reduce the number of hazard trees.

Ponderosa pine growing in this area is at a much higher risk to bark beetle caused mortality than the other conifers due to its abundance within the stand. There is also a history of western pine beetle activity in similar low elevation west side Sierra Nevada forests during periods of drought. Therefore, ponderosa pine should be given special consideration when planning thinning treatments to reduce its susceptibility to successful western pine beetle attacks. Risk could be decreased by reducing density to lower levels in ponderosa pine dominated pockets than what is appropriate for surrounding mixed conifer stands and/or by removing more ponderosa pines from these pockets in favor of retaining other tree species to increase diversity.

It is important to note that when implementing tree removal or hand thinning in a recreation area, it is required that all conifer stumps greater than 3” in diameter be treated with a registered borate compound (FSM R5 Supplement 2300-92-1 modified by FSH R5 Supplement 3409.11-2010-1) to reduce the probability of infection by *Heterobasidion occidentale* and *H. irregulare*. The causal agents of heterobasidion root disease (formerly referred to as annosus root disease).

Hazard tree management for campgrounds

Despite the effectiveness of any long or short-term plans to prevent tree injury and mortality, some trees, through declining health, will eventually become hazards. To minimize risk, hazard trees should be identified and removed before they fail. The current practice for many campgrounds is to remove trees as they die. This eliminates the risk from dead trees but fails to address living trees that are infected with root disease, heart rot, and/or have other structural defects. These high-risk green trees are equally hazardous and should not be overlooked. Therefore, it is recommended that the Forest develop a hazard tree evaluation and monitoring plan for its campgrounds. At your request, Forest Health Protection can provide information

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and assist with the development of this plan. In the short-term, trees within the campground that have obvious stem decay, dead tops and/or large dead branches should be carefully evaluated and hazards removed or pruned as soon as possible. All standing dead trees within striking distance of campsites or campground facilities should be removed immediately.

General recommendations for campground renovation

Maintaining and promoting healthy trees are important objectives for development plans in campgrounds. Care should be taken during future campsite, trail and facility construction to minimize negative impacts on the landscape. The following guidelines should be applied for areas under construction or in areas where future construction will take place.

- Tree density should be appropriate for the site. This will provide access to light, moisture and nutrients and allow the trees to better cope with their altered environment.
- Trees that will directly interfere with structures or that will be seriously damaged during construction or excavation should be removed.
- Leave a mixture of ages and species to provide a continual forest canopy over the years.
- Fence off individual or groups of trees before construction to negate or minimize root damage by soil compaction or trunk and root damage by equipment. Protective fences should be placed, at a minimum, at drip line. Depending on the species, tree roots can exist within a radius two times the crown radius and encompass an area well beyond drip line. Drip line is defined by the outer edge of the foliage. Penalties for damaging trees should be incorporated into tree removal or construction contracts.
- Road or lot grades should be changed as little as possible. Grading damages roots and can set up conditions that favor soil erosion. It can also alter the contour such that the flow of surface and subsurface water is drastically affected.
- Trenches should always be dug away from tree roots.
- Do not back fill with earth or rocks around the trunks of trees.
- Avoid paving with either concrete or asphalt over root systems, or close to the trunks of trees.
- Use caution in applying wood preservatives and other chemicals to buildings. Trees and other plants have been killed by direct contact with them or as a result of their runoff in rainwater.
- Avoid leaving green pine slash on site to prevent the buildup of pine engraver (*Ips pini*) beetle populations that may attack standing green trees.

Future construction or vegetation management activities that incorporate the above guidelines will help assure the existence of vigorous and healthy trees following project completion.

Potential for administrative study on big leaf maple

Forest Health Protection would be interested in treating 2 – 3 big leaf maples with systemic insecticides to prevent leafhopper feeding on foliage within the Gansner Bar campground beginning in 2012. Up to 3 treated trees and 3 paired controls would be monitored for approximately 3 years to assess leafhopper feeding and crown condition. These treatments were

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discussed with the recreation staff during the site visit and more specific information will be provided to the District in the next few months as we seek authorization for this work.

If you have any questions regarding this report and/or need additional information please contact me at 530-252-6431 or email dcluck@fs.fed.us.

/s/ Danny Cluck

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NE CA Shared Services Area

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